35th Annual Meeting, APS Division of Plasma Physics
1-5 November 1993—St. Louis, MO

ABSTRACT SUBMITTAL FORM

Subject **Classification Category** 1.8.1 ☒ **Theory** ☐ **Experiment**

Implementation of an Electromagnetic 3D Plasma Particle-in-Cell Code on a MIMD Parallel Computer.* P. Co Liewer, J. Wang, P. Lyster, E. Huang, Jet Propulsion Laboratory, California Institute of Technology, V. K. Decyk, UCLA. -- A three-dimensional electromagnetic plasma particle-in-cell (PIC) code has been implemented on the Intel Delta MIMD parallel supercomputer using the General Concurrent PIC algorithm. The GCPIC algorithm uses a domain decomposition to divide the computation among the processors: A processor is assigned a subdomain and all the particles in it[1]. Particles must be exchanged between processors as they move. This algorithm has been found, to be' very efficient even 'when a large fraction (e.g. 30%) of the particles must be exchanged at every time step. The electromagnetic field solve uses the standard explicit leap-frog scheme to advance the fields. A comparison will be made of the parallel efficiency of the finite-difference field solve and an FFT solution of an electrostatic field solve.

1. P. C. Liewer and V. K. Decyk, JCP 85 (198$0 302.

*Supported by OSC/DoE and SNL, Albuquerque

☐ Prefer Poster Session

☐ Prefer Oral Session

☐ This poster/oral should be placed in the following grouping: (specify order)

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☐ Special Facilities Requested (e.g., movie projector)

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☒ Other Special Requests

Numerical Tokamak Project Session

Submitted by:

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(Signature of APS Member)

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This form, or a computer generated form, pius TWO XEROX COPIES, must be received by Friday, 2 July 1993, at the following address:

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